PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark Office, PCT
2011 South Clark Place Room CP2/5C24
Arlington, VA 22202
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in its capacity as elected Office

Date of mailing (day/month/year) 12 March 2001 (12.03.01)	
International application No. PCT/DK00/00337	**Applicant's or agent's file reference** P199900733 WO
International filing date (day/month/year) 23 June 2000 (23.06.00)	**Priority date** (day/month/year) 24 June 1999 (24.06.99)
Applicant SCHOU, Roar, B.	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

16 January 2001 (16.01.01)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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Form PCT/IB/331 (July 1992) DK0000337

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* P199900733 WO

Box No. I TITLE OF INVENTION

A method and a packaging for packaging and freezing food substances

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

PETERSON BECK A/S
P.O. Box 135
DK-3700 Rønne
DENMARK

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State *(that is, country)* of nationality: DK Denmark

State *(that is, country)* of residence: DK Denmark

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

SCHOU, Roar B.
Strandvejen 23
DK-3700 Rønne
DENMARK

This person is:
☐ applicant only
☒ applicant and inventor
☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality: DK Denmark

State *(that is, country)* of residence: DK Denmark

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

Hofman-Bang A/S
Hans Bekkevolds Allé 7
DK-2900 Hellerup
DENMARK

Telephone No. +45 39 48 81 00

Facsimile No. +45 39 48 81 80

Teleprinter No. 19 085 hbbdk

☐ **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

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Regional Patent

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- ☒ EA **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Repu blic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of th : Eurasian Patent Convention and of the PCT
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- ☒ TZ United Republic of Tanzania
- ☒ UA Ukraine
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Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is: national application: country	regional application:* regional Office	international application: receiving Office
item (1) 24.06.1999	PA 1999 00906	Denmark		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): _____

* *Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.*

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):* ISA/ SE

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority):*

Date (day/month/year)	Number	Country (or regional Office)
24.09.1999	DK 99/00100	Denmark

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request	:	3
description (excluding sequence listing part)	:	13
claims	:	4
abstract	:	1
drawings	:	2
sequence listing part of description	:	
Total number of sheets	:	23

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☒ priority document(s) identified in Box No. VI as item(s): 1
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other *(specify)*: DK 99/00100

Figure of the drawings which should accompany the abstract: 1

Language of filing of the international application: Danish

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

PETERSON BECK A/S

Roar B. Schou
Managing Director

Roar B. Schou

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1. Date of actual receipt of the purported international application:	2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA/	6. ☐ Transmittal of search copy delayed until search fee is paid.

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(71) Applicant *(for all designated States except US)*: PETERSON BECK A/S [DK/DK]; P.O. Box 135, DK-3700 Rønne (DK).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: SCHOU, Roar, B. [DK/DK]; Strandvejen 23, DK-3700 Rønne (DK).

(74) Agent: HOFMAN-BANG A/S; Hans Bekkevolds Allé 7, DK-2900 Hellerup (DK).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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Published:
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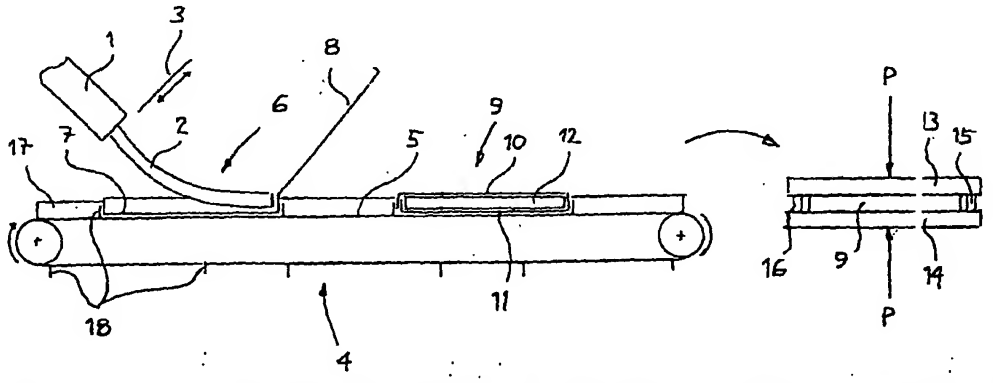
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD AND A PACKAGING FOR PACKAGING AND FREEZING FOOD SUBSTANCES



(57) Abstract: A method of packaging and freezing food substance comprising shaping of a plate of unfrozen food substance and subsequent packaging and freezing of the unfrozen plate of food substance, and wherein a carton packaging is used for packaging the unfrozen plate of the food substance that comprises a substantially rectangular bottom panel with two opposed, long side panels and two opposed, short end panels and a substantially rectangular cover panel, wherein the cover panel and the bottom panel are preferably connected to each other via one of the short end panels; wherein the unfrozen plate of food substance is arranged directly on the bottom face of the carton packaging, following which the cover panel of the carton package is closed over the bottom panel, such that the unfrozen plate of food substance is enclosed completely by the bottom panel, cover panel and side panels of the carton packaging, and following which the carton packaging containing the unfrozen plate of food substance is arranged in a freezer with a view to freezing the plate of food substance whereby the carton packaging is frozen onto the plate of food substance.

WO 01/00050 A1

A method and a packaging for packaging and freezing food substances

The present invention relates to a method for packaging and freezing food substances, comprising shaping of a plate of unfrozen food substance and subsequent packaging and freezing of the unfrozen plate of food substance. The invention also relates to a packaging of the block-carton type adapted especially for the method corresponding to the present invention.

In particular in connection with the packaging and freezing of relatively homogenous fish substances, such as Surimi or the like fish products, the above-mentioned method is widely used today. The known method takes place for instance by the unfrozen food substance being extruded and cut off in plates that are subsequently filled into a plastics bag that is positioned in a freezing frame that consists of a bottom and four side faces. Following positioning of the unfrozen plate of fish substance in the freezing frame, it is positioned in a plate freezer whereby the plate of unfrozen fish substance is frozen while in the freezer tray. In this case it is one of the objects of the plastics bag to ensure that the plate of fish substance does not freeze onto the freezer plates of the plate freezer, and likewise the plastics bag is to protect the foodstuff against drying out, rancidity and "freeze burn".

The freezer tray is subsequently removed from the plate freezer and the plate of fish substance frozen in the plastics bag is removed from the freezer tray and the frozen plate of fish substance is packed further in a carton packaging.

Block cartons are a type of packaging that is used for manual packaging of fresh foodstuffs prior to freezing, eg within the fish industry for freezing fish or fish products, cf eg WO 97/06064. Conventionally a block carton is manufactured in the form of a plane liner with pre-embossed folding lines that is converted to a packaging by being erected in a so-called freezing frame. Within the industry such liner is also known by the designation "fishblock liner", "sheet" or "blanket" and consists of a bottom panel with a front and rear side panel and two opposed, shorter end-side panels, also designated end panels, wherein the rear panel is connected to one side of a cover panel, and wherein the cover panel can be provided with one or more flaps along the remaining sides of the cover. In order to ensure the user optimal access to the open block carton, the cover is arranged on one of the side panels.

In order to ensure improved closure of the carton when it is erected in a freezing frame, the side panels can be provided with corner segments in the form of corner flaps attached to a single side panel, as described eg in WO 97/11890. Such closure of the corners protects against liquid seeping out of the erected carton, and likewise the contents are protected against damage (freeze burn) during the subsequent freezing procedure. Correspondingly the cover can be provided with side flaps.

It should be noted that it is important that the corner flaps and the side flaps of the cover are located on the outside of the carton since it is undesirable to have them frozen into the fish or correspondingly. This would mean that when the carton is removed from the frozen

commodity, a part of the carton would more or less visibly remain in the commodity, which is undesirable for obvious reasons.

The work involved in erecting the block carton in the freezing frame is conventionally performed manually which means that the above-mentioned errors occur easily, in particular in view of the very elevated work rate at which this work is performed.

A variety of different solutions have been proposed to the problem of avoiding that portions of the block carton are frozen into the fish or the like.

Thus, WO 96/02422 teaches a block carton as described above that is provided with indicators on the liner corresponding to the outsides of the folded carton, said indicators becoming visible in case of erroneous closure of the block carton. It is a drawback in connection with this block carton that the visual inspection of the block carton cannot be performed until after discharge of the block from the square freezing frame, ie after the carton has been filled with fish or the like, closed and frozen. Erroneous closure of the block carton thus presupposes that the all of the fish is initially removed from the block carton, following which the fish needs to be thawed to enable a renewed filling operation. Thus, in case of erroneous closure of the block carton a heavy workload is involved in remedying this erroneous closure.

WO 97/11890 teaches a block carton as described above that is provided with indicators on the liner corresponding to the insides of the folded carton, said indicators becoming visible in case of erroneous closure

of the corner flaps of the block carton. This type of indicators enables control of correct folding prior to filling of the carton.

A third option would be to use both of said indicator systems on the same liner, which would facilitate control during as well as after performing this work.

Conventionally a liner for a block carton consists of a cardboard blank coated on the one side with a coating intended to ensure that the foodstuff does not freeze onto the interior face of the block carton. Typically, the coating consists of a wax or paraffin product. In order to further ensure that the packaging is able to receive a part of the moisture emitted during the freezing process, the coating can be provided with a number of openings, typically a large number of small openings, also designated pin-holes that can have a maximum diameter of up to 3 mm, but they are typically smaller than 1 mm. Additionally these small openings have the effect that the food substance does not freeze onto the entire inside of the packaging, and therefore that they are readily released there from. For further controlling evaporation from the packaged foodstuff it is an option that, on its other side, the packaging is also provided with a coating, but such will typically not be provided with openings. For some types of block cartons a through-going coating is used for the interior face, to which coating an uneven surface has been imparted by embossing the cardboard with a given pattern.

In the light of this, it is the object of the present invention to provide a method whereby a more simple and inexpensive packing and freezing process can be obtained.

It is furthermore an object to further prevent the foodstuff from drying out or becoming rancid.

According to a first aspect and according to the present invention this is accomplished by a method that simplifies the known principles by enabling that the fish substance is frozen directly within the final packaging thereby enabling quicker and less expensive manufacture. More specifically, these advantages are obtained by the plate-formed, unfrozen food substance being, following shaping by extrusion, positioned directly on a bottom face of an erected carton packaging following which the cover panel of the carton packaging is closed over the bottom face such that the unfrozen plate of food substance is completely enclosed by the bottom face, cover panel and side panels of the carton packaging following which the carton packaging containing the unfrozen plate of food substance is arranged in a freezer with a view to freezing of the plate of food substance whereby the carton packaging is frozen onto the plate of food substance.

In order to ensure correct positioning of the unfrozen plate within the packaging the plate would expediently be "directed" down into the packaging. According to a preferred embodiment this is ensured in that the plate is shaped "longitudinally", ie that the plate is extruded with a width corresponding to the extrusion nozzle that is smaller than the length of the cut-off plate. In order to also ensure that the front end of the plate (i.e. most distant from the extruder) is not positioned on top of the end panel of the packaging but within same, the cover panel of the packaging is - in a preferred embodiment - arranged on one of the short side panels thereby enabling

that the foodstuff plate is extruded towards an upright cover panel that thereby serves to ensure that the plate is positioned correctly within the packaging. The fact that the extrusion of the food substance is effected "longitudinally" also means that the production equipment (eg the extruder and a conveyor) can have relatively small dimensions, which is advantageous in confined spaces onboard a vessel.

Thus, it is hereby possible to provide carton-packaged blocks of fish substance or other food substance without an ensuing risk of the fish substance freezing onto the freezing faces of a freezer, and the packaging can be rendered less expensive and more simple in that only one single packaging process is required, and in that the previously used freezer trays and associated storage and maintenance thereof are rendered superfluous.

According to a preferred embodiment of the invention the plate of unfrozen food substance is formed by extrusion of the food substance through an extrusion nozzle directly down onto the packaging bottom, and subsequently cutting off the unfrozen string of food substance to form the finished, unfrozen plate of food substance.

The method according to the present invention can be further automated in that the carton packaging is transported on a conveyor at a given rate of conveyance, and in that the plate of unfrozen food substance is extruded at a rate that corresponds substantially to the rate of conveyance of the conveyor.

Particularly advantageously th carton packaging containing the unfrozen plate of food substance is frozen

between two freezer plates that abut on a the bottom panel and cover panel of the carton packaging with a certain pressure. Thus, hereby an extremely expedient conduction of heat is accomplished from the food substance through the cover and bottom face of the carton packaging and to the freezer plates.

Further advantageously spacer elements can be provided between the freezer plates with a view to ensuring a minimum distance between the freezer plates during the freezing procedure whereby it is ensured that the finished, frozen, packaged plates of food substance have the same height.

In order to offer optimal protection of the foodstuff against drying-out, rancidity and "freeze burn", the packaging is - in a preferred embodiment - at least on the one side coated with a coating that prevents evaporation from the inside as well as access of oxygen from the outside. Today, this is not possible with the plastics bags of polyethylene that are conventionally used in the freezing procedure of Surimi or other extruded foodstuffs. Such improved protection of the foodstuff during freezing and storage increases the quality of the frozen foodstuff.

A further aspect of the invention relates to a carton packaging for use in the method according to the invention.

The carton packaging according to the invention comprises essentially rectangular bottom panel with four sides to which two opposed side panels and two opposed shorter end panels are connected, and a cover panel with four sides

wherein the cover panel and the bottom panel are connected to each other via one of the short end panels. In order to ensure adequate functionality, the carton packaging is further provided with a coating on at least the one side. The term "the one side" is used to designate either the one side of the two sides of the plane, not yet erected liner, or the interior side of the erected carton packaging.

As opposed to the conventional block cartons that are intended for use in manual positioning of a foodstuff with ensuing positioning of the cover on the one of the two longer sides of the packaging, the block carton (or a liner for a block carton) according to the present invention is intended for use exclusively in connection with direct filling of a plate of food substance from an extrusion device. As described above this ensures easy and reliable positioning of the plate on the bottom face of the packaging.

According to preferred embodiments the packaging can be provided with corner flaps and indicators as described above.

The invention also relates to an apparatus for use in the method according to the invention, and wherein the apparatus according to the invention comprises a conveyor, said conveyor having a transport face that moves in the direction of conveyance of the conveyor, and wherein there is provided - at each side of the conveyor - elevations that extend in the longitudinal direction of the conveyor and above the transport face of the conveyor, said elevations being arranged at a distance from each other that corresponds to the short lateral

length of the bottom panel of a carton packaging with a view to supporting the side panels of the carton packaging at a right angle relative to the bottom panel of the carton packaging. Hereby it is obtained that the unfrozen food substance positioned on the bottom panel of the carton packaging is covered as quickly as possible by side faces on the carton packaging.

This advantage is further enhanced if the conveyor has, on its transport face, drivers that extend from the transport face with a view to supporting a short side panel on the carton packaging.

The invention will now be described in further detail with reference to the drawing, wherein:

Figure 1 is an explanatory sketch that illustrates the method and the principles of the construction of an apparatus for use in connection with the invention; and

Figure 2 is a drawing that illustrates a preferred embodiment of a carton packaging for use in the method according to the invention.

Figure 1 is an explanatory sketch of an apparatus for packaging and freezing food substance. Thus, the apparatus comprises an extruder of which Figure 1 shows only the front portion of the extruder nozzle of the extruder 1 from which a plate 2 of food substance of a substantially rectangular cross section is extruded. At the extruder nozzle 1 a cutter mechanism 3 is provided with a view to cutting off the extruded food substance 2 in suitabl lengths.

Underneath the extruder nozzle 1 a conveyor 4 is arranged which is configured herein as a conveyor belt 5 on which a first carton packaging 6 is arranged that has a bottom portion 7 and a cover portion 8. As will appear the cover portion 8 in the first carton packaging 6 is open, and in the shown position the food substance 2 is extruded down into the first carton packaging 6 that comprises erected short and long side panels where the side panel that faces towards the viewer is not shown for the sake of overview.

As will appear from the figure, the food substance is extruded in a direction towards the upright cover panel 8 of the packaging thereby preventing that the front end of the plate (ie most distant from the extruder) is not positioned on top of or outside the end panel of the packaging, but within this. In the event that the food substance is positioned in part on the inside of the cover panel, this part of the food substance is pressed down into the packaging when the cover is closed. Since completely correct positioning of the food substance is thus not necessary this arrangement enables filling of the packaging at a higher rate. In the figure, the packaging is shown without side panels towards the viewer.

The carton packaging is subsequently transported a further distance and will, at a later stage, occupy the position occupied by the other carton packaging 9. Here the cover 10 of the carton packaging 9 has been closed across the bottom portion 11 such that the amount of food substance 12 positioned in the other carton packaging is enclosed by the carton packaging 9.

The filled carton packaging 9 is subsequently transferred to a plate freezer that, in principle, comprises at least two freezer plates 13,14 that press against the cover and bottom portion of the carton packaging 9 whereby the non-frozen contents of the carton packaging 9 are frozen to a solid block. According to a preferred embodiment of the invention, the plate freezer is provided with spacer elements 15,16 that ensure a uniform distance between the freezer plates 13,14 whereby an even thickness is imparted to the ready-packaged food product. The two freezer plates abut with a given pressure P on the bottom panel and cover panel of the carton packaging.

When the food substance plate is frozen, it will normally expand and therefore it is necessary to take this into account when selecting the dimensions of the plate of food substance such that the cross section of the unfrozen plate is smaller than the cross section of the packaging perpendicular to its longitudinal axis. On the other hand it is also important that the ready-frozen food substance comes into contact with the side panels of the packaging. With this as a starting point, the final choice of dimensions for the plate of unfrozen food substance is a choice that must be made by the person skilled in the art in accordance with the circumstances, eg the type of food product, the size of the packaging and the freezing conditions.

The conveyor 4 features lateral elevations 17 that extend in the longitudinal direction of the conveyor belt 5, and drivers 18 are configured on the transport face of the conveyor belt 5, said side elevations 17 and drivers 18 being arranged such that side panels on the carton packagings 6,9 are kept perpendicular to the botton panel

7,11 of the carton packaging. Hereby adequate, mutual positioning of the carton packaging 6,9 and the food substance 2,12 is ensured. To facilitate overview, the side elevations facing towards the viewer are not shown.

Instead of a conveyor with elevations and drivers, individual freezing frames can be used such that the carton packagings are first erected in a freezing frame, following which the food substance is extruded down into the erected packaging. Advantageously the freezing frames are arranged and charged onto a conveyor that is preferably configured for advancing the freezing frames at a velocity that corresponds to the extrusion rate of the food substance.

As described with reference to Figure 1, the cover 8 is arranged on one of the short side panels of the packaging.

Now Figure 2 illustrates an advantageous embodiment of a carton packaging 6 for use in the method according to the present invention.

As will appear the carton packaging 6 is shown as a planar blank that comprises a substantially rectangular bottom panel 7 for which the long side edges are provided with long side panels 19,20, and the short side edges are provided with short side panels 21,22. At the side edges the bottom panel 7 is provided with embossed lines (indicated by dotted lines in the figure), said embossed lines separating the bottom panel 7 from the side panels 19,20,21,22, and corner flaps 24 are attached at the ends of the short side panels via embossed lines.

When the bottom panel 7 on the carton packaging 6 is positioned on the conveyor belt 5 as shown in Figure 1, the long side panels 19,20 will thus abut on the elevations 17 and extend perpendicularly from the bottom panel 7, and the same will apply to the short side panels 21,22 that are, on the conveyor belt, supported by the drivers 18 on the conveyor belt 5. When the packaging is erected by means of a freezing frame the side panels will, in a corresponding manner, abut on the interior faces of the freezing frames.

According to the invention, the cover 8 is positioned on the one of the short side panels 22 (separated by embossing lines), and as shown the cover 8 has the same length and width as the bottom panel 7. Hereby the cover 8 can tilt across the bottom panel 7 and thus cover it completely. In order to ensure the tightest possible packaging the cover is, as shown, provided with side flaps 23 that are attached to the cover 8 via embossing lines (shown with dotted line). Correspondingly the cover is, as shown, provided with side flaps 23 that are attached to the cover 8 via embossed lines (shown with dotted line).

As described above the liner can be provided with indicators that enable a control whether the block carton has been erected or folded correctly. Figure 2 shows a liner seen from the topside, ie the side that faces inwards/upwards in the erected block carton. The liner is provided with indicators 40 on the internal side of the corner flaps 24. Since the corner flaps are, in the correctly erected block carton, to be located on the outside of the side panels, non-visible indicators 40 will show that the carton is erected correctly.

Correspondingly it will be possible to provide the side panels with indicator (not shown) corresponding to the areas that are covered by the corner flaps 24 when the carton is erected. In that case the absence of an indicator will indicate that the corner flap is located on the wrong, interior side of the side panel. Additionally, the liner is on the opposite side (ie the underside) provided with indicators (41) shown with dotted line) on the side flaps 23. When the cover is closed correctly, the side flaps are located on the outside of the closed packaging and it follows that the indicators 41 are visible. Instead of the corner flaps, the side panels can be provided with indicators (not shown) that are covered when the cover is closed correctly. Typically, the indicators are coloured, printed indicators that enable swift and reliable visual control.

Claims

1. A method of packaging and freezing food substance, comprising the steps of:

- extruding a plate of unfrozen food substance;
- packaging the unfrozen plate of food substance in a carton packaging;
- wherein the carton packaging comprises a substantially rectangular bottom panel with two opposed, long side panels, and two opposed, short end panels and a substantially rectangular cover panel;
- wherein the unfrozen plate of the food substance is positioned on the bottom panel of the carton packaging, following which the cover panel of the carton packaging is closed to cover the bottom panel such that the unfrozen plate of food substance is completely enclosed by the bottom panel, cover panel and side panels of the carton packaging;
- following which the carton packaging containing the unfrozen plate of food substance is positioned in a freezer with a view to freezing the plate of food substance whereby the carton packaging is frozen completely onto the plate of food substance.

2. A method according to claim 1 wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

3. A method according to claim 1 or 2, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food

substance through an extruder nozzle with a flow rate of food substance through the extruder nozzle that corresponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.

4. A method according to claim 3, wherein the food substance is extruded directly into the carton packaging.

5. A method according to any one of the preceding claims wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates that abut with a given pressure on the bottom panel and cover panel of the carton packaging.

6. A method according to any one of claims 3-5, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

7. A method according to any one of claims 3-5, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

8. A liner for a block carton, wherein the liner is manufactured from a basis material, preferably cardboard or carton, and comprises:

- a first and a second side defining a first and a second surface, wherein the first side, at least on a part of its surface, is provided with a coating that is substantially impermeable to liquid, and wherein the coating comprises a number of small apertures distributed across the surface such that, through the apertures, there is connection between the surroundings and the basis material of the liner;
- a substantially rectangular bottom panel with two opposed, long side panels and two opposed, short end panels, and a substantially rectangular cover panel corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

9. A liner for a block carton, comprising:

- a first and a second side defining a first and a second surface, wherein the first side, on at least a part of its surface, is provided with a coating, and wherein the coating comprises a number of embossments resulting in a non-planar surface;
- a substantially rectangular bottom panel with two opposed, long side panels and two opposed, short end panels and a substantially rectangular cover panel corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

10. A liner for a block carton according to claim 8 or 9, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

11. A liner for a block carton according to any one of claims 8-10, wherein the coating comprises wax or paraffin.

12. A liner for a block carton according to any one of claims 8-11, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel, and wherein the corner flaps on the first side comprises visual indicators.

13. A liner for a block carton according to any one of claims 8-12, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

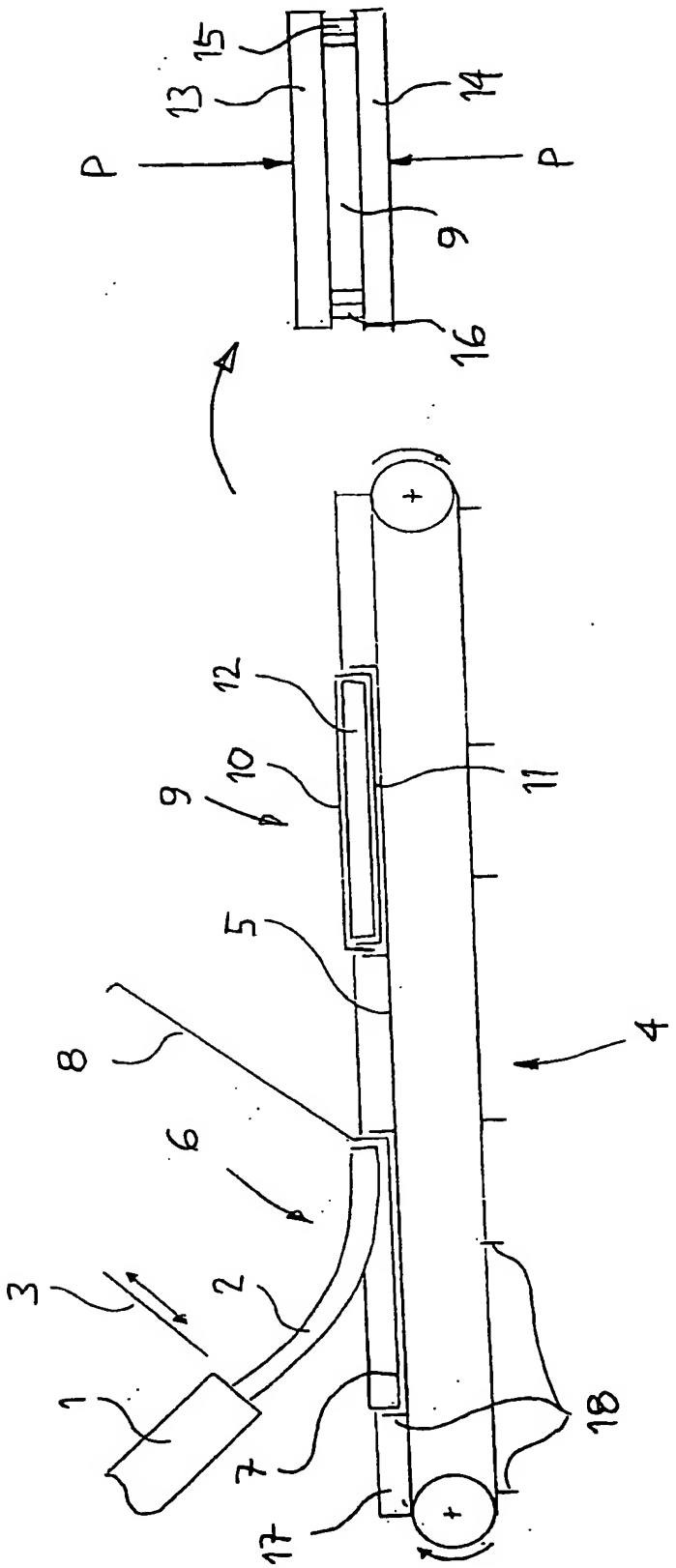


Fig. 1

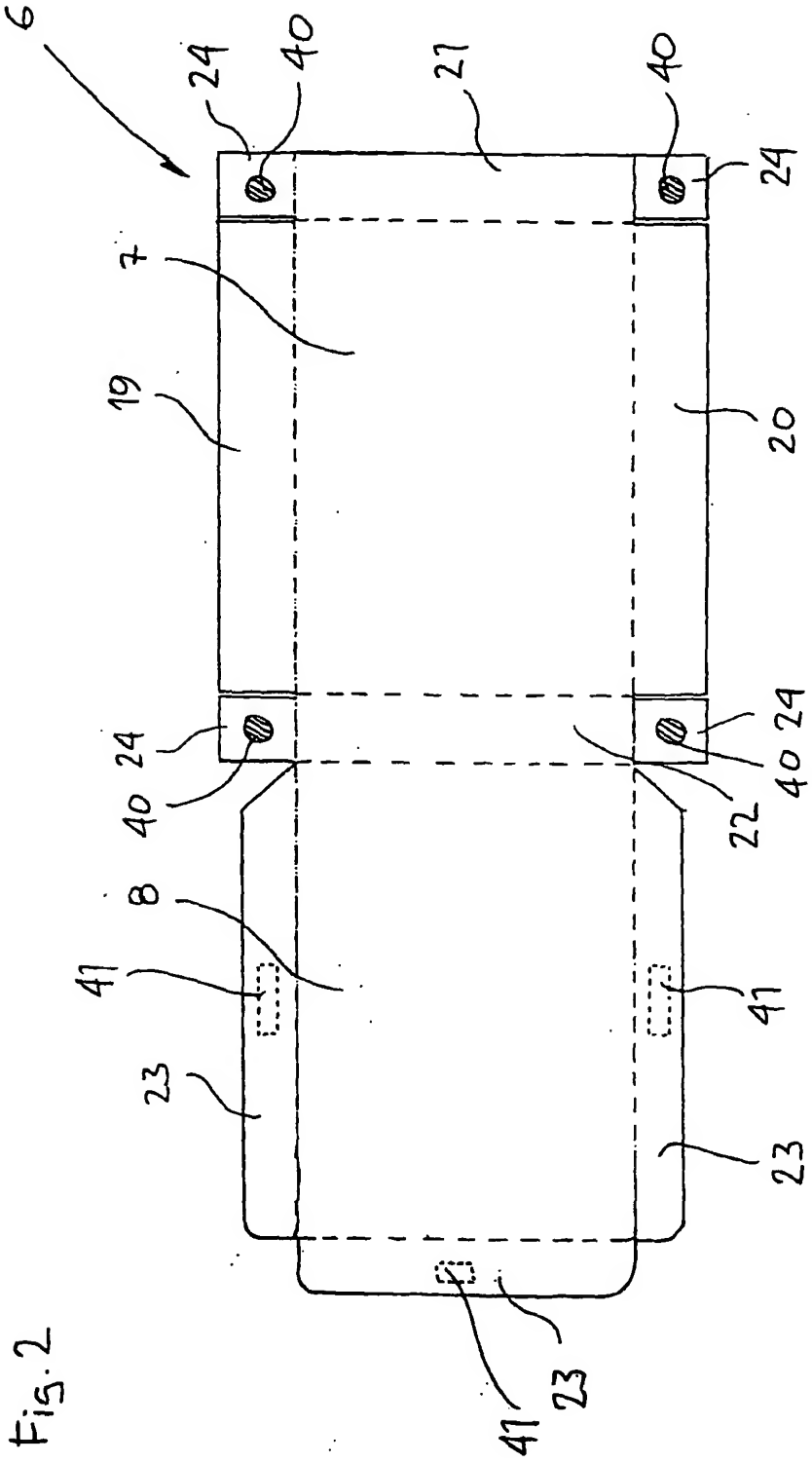


Fig. 2

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Roar B. SCHOU Attn: PCT Branch

Application No. US National Stage of PCT/DK00/00337

Filed: December 21, 2001 Docket No.: 111492

For: A METHOD AND A PACKAGING FOR PACKAGING AND FREEZING FOOD SUBSTANCES

SUBMISSION OF THE ANNEXES TO THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

Attached hereto are the annexes to the International Preliminary Examination Report (Form PCT/IPEA/409). The attached material replaces the claims.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Joel S. Armstrong
Registration No. 36,430

JAO:JSA/zmc

Date: December 21, 2001

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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PATENT COOPERATION TREATY

PCT

REC'D 13 SEP 2001

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70) 14

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P199900733 WO		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/DK00/00337	23/06/2000	24/06/1999
International Patent Classification (IPC) or national classification and IPC A23L3/36		
Applicant PETERSON BECK A/S et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
16/01/2001	30.08.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Weber, G Telephone No. +49 89 2399 8656

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00337

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1-14	as originally filed				

Claims, No.:

1-13	as received on	14/07/2001	with letter of	12/07/2001	

Drawings, sheets:

1/2,2/2	as originally filed				

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

   ☐ restricted the claims.

   ☒ paid additional fees.

   ☐ paid additional fees under protest.

   ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with.

   ☒ not complied with for the following reasons:
   see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

   ☐ all parts.

   ☒ the parts relating to claims Nos. 1-8.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-7
	No:	Claims 8
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-8

Industrial applicability (IA) Yes: Claims 1-8
No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

ad IV:

Unity of invention between the subject-matter of claim 8 and 9 cannot be seen: Independent claim 8 is directed to a liner for a block carton having a coating and small apertures in the said coating in order to provide contact of the base material to the surroundings.

Independent claim 9 is directed to a liner for a block carton having embossments in the coating. The said two alleged inventions are not linked together by a general common inventive concept. Since the applicant has decided to pay additional fees for claim 8 only, the alleged invention of claim 9 will not be examined.

ad V:

1). The subject-matter of claim 1 can be regarded as being novel (Article 33(2) PCT) since the feature: "extruded" does not appear in the prior art in connection with "packaging and freezing in a carton".

However, from D1 = WO9706064 it is known to freeze food stuff in cartons having erected side panels.

Whether or not the said foodstuffs have been prepared by extrusion or other conventional processes seems to play no role for the later packaging and freezing in a carton. Thus the presence of an inventive step (Article 33(3) PCT) cannot be seen; i.e. there is no solution to a technical problem, other than the provision of an obvious alternative "extruded food instead of any type of food". In connection with this, it should e noted that the closest prior art document s D1 and not a technique which describes freezing of extruded products in a different way. An invention has to be non-obvious over every piece of prior art and not only over a particular one.

2). Embossed liner cartons (see e.g. D2 = CA-A-1195162 (claims 1,2)) are already well known in the art. Since the wording of claim 8 does not exclude the cartons disclosed in D2, claim 8 lacks novelty (Article 33(2) PCT).

3). A positive IPER for the subject-matter of the dependent claims can only be established when they refer to independent claims meeting the requirements of the PCT.

ad VII:

.To meet the requirements of Rule 5.1 a) ii) PCT, the documents D1 and D2 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

10/018792
JC03 Rec'd PCT/PTO 21 DEC 2001

Claims [redacted]

1. A method of packaging and freezing food substance, comprising the steps of:

- extruding a plate of unfrozen food substance (2);
- packaging the unfrozen plate of food substance in a carton packaging (6);
- wherein the carton packaging comprises a substantially rectangular bottom panel (7) with two opposed, erected, long side panels (19, 20), and two opposed, erected, short end panels (21, 22) and a substantially rectangular cover panel (8);
- wherein the unfrozen plate of the food substance is positioned on the bottom panel of the carton packaging, following which the cover panel of the carton packaging is closed to cover the bottom panel such that the unfrozen plate of food substance is completely enclosed by the bottom panel, cover panel and side panels of the carton packaging;
- following which the carton packaging containing the unfrozen plate of food substance is positioned in a freezer (13, 14) with a view to freezing the plate of food substance whereby the carton packaging is frozen completely onto the plate of food substance.

2. A method according to claim 1 wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

3. A method according to claim 1 or 2, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food substance through an extruder nozzle (1) with a flow rate of food substance through the extruder nozzle that corre-

sponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.

4. A method according to claim 3, wherein the food substance is extruded directly into the carton packaging.

5. A method according to any one of the preceding claims wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates (13, 14) that abut with a given pressure on the bottom panel and cover panel of the carton packaging.

6. A method according to any one of claims 3-5, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

7. A method according to any one of claims 3-5, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance

8. A liner (6) for a block carton, wherein the liner is manufactured from a basis material, preferably cardboard or carton, and comprises:

- a first and a second side defining a first and a second surface, wherein the first side, at least on a part of its surface, is provided with a coating that is substantially impermeable to liquid, and wherein the coating comprises a number of small apertures distributed

across the surface such that, through the apertures, there is connection between the surroundings and the basis material of the liner;

- a substantially rectangular bottom panel (7) with two opposed, long side panels (19, 20) and two opposed, short end panels (21, 22), and a substantially rectangular cover panel (8) corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

9. A liner for a block carton, comprising:

- a first and a second side defining a first and a second surface, wherein the first side, on at least a part of its surface, is provided with a coating, and wherein the coating comprises a number of embossments resulting in a non-planar surface;
- a substantially rectangular bottom panel (7) with two opposed, long side panels (19, 20) and two opposed, short end panels (21, 22) and a substantially rectangular cover panel (8) corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

10. A liner for a block carton according to claim 8 or 9, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

11. A liner for a block carton according to any one of claims 8-10, wherein the coating comprises wax or paraffin.

12. A liner for a block carton according to any one of claims 8-11, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel,

and wherein the corner flaps on the first side comprises visual indicators.

13. A liner for a block carton according to any one of claims 8-12, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

Claims

1. A method of packaging and freezing food substance, comprising the steps of:

- extruding a plate of unfrozen food substance;
- packaging the unfrozen plate of food substance in a carton packaging;
- wherein the carton packaging comprises a substantially rectangular bottom panel with two opposed, long side panels, and two opposed, short end panels and a substantially rectangular cover panel;
- wherein the unfrozen plate of the food substance is positioned on the bottom panel of the carton packaging, following which the cover panel of the carton packaging is closed to cover the bottom panel such that the unfrozen plate of food substance is completely enclosed by the bottom panel, cover panel and side panels of the carton packaging;
- following which the carton packaging containing the unfrozen plate of food substance is positioned in a freezer with a view to freezing the plate of food substance whereby the carton packaging is frozen completely onto the plate of food substance.

2. A method according to claim 1 wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

3. A method according to claim 1 or 2, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food

substance through an extruder nozzle with a flow rate of food substance through the extruder nozzle that corresponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.

4. A method according to claim 3, wherein the food substance is extruded directly into the carton packaging.

5. A method according to any one of the preceding claims wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates that abut with a given pressure on the bottom panel and cover panel of the carton packaging.

6. A method according to any one of claims 3-5, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

7. A method according to any one of claims 3-5, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

8. A liner for a block carton, wherein the liner is manufactured from a basis material, preferably cardboard or carton, and comprises:

- a first and a second side defining a first and a second surface, wherein the first side, at least on a part of its surface, is provided with a coating that is substantially impermeable to liquid, and wherein the coating comprises a number of small apertures distributed across the surface such that, through the apertures, there is connection between the surroundings and the basis material of the liner;
- a substantially rectangular bottom panel with two opposed, long side panels and two opposed, short end panels, and a substantially rectangular cover panel corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

9. A liner for a block carton, comprising:

- a first and a second side defining a first and a second surface, wherein the first side, on at least a part of its surface, is provided with a coating, and wherein the coating comprises a number of embossments resulting in a non-planar surface;
- a substantially rectangular bottom panel with two opposed, long side panels and two opposed, short end panels and a substantially rectangular cover panel corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

10. A liner for a block carton according to claim 8 or 9, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

11. A liner for a block carton according to any one of claims 8-10, wherein the coating comprises wax or paraffin.

12. A liner for a block carton according to any one of claims 8-11, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel, and wherein the corner flaps on the first side comprises visual indicators.

13. A liner for a block carton according to any one of claims 8-12, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 00/00337

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A23L 3/36
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A23L, A23B, B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9706064 A1 (CARTOLIT APS), 20 February 1997 (20.02.97), page 1, line 12 - line 38, figure 1 --	1,3-7
A	DE 3729514 A1 (STAL SAMIFI S.P.A.), 24 March 1988 (24.03.88) --	1-13
A	WO 9807327 A1 (WYBORN, LINDSAY, GEORGE), 26 February 1998 (26.02.98) --	1-13
A	CA 1195162 A (BATEMAN, SAMUEL G.), 15 October 1985 (15.10.85), claims 1-2 -- --------	8-11

[ ] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 Sept 2000	11 -10- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Inger Löfgren/Els Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

01/08/00

International application No.
PCT/DK 00/00337

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9706064 A1	20/02/97	AU 706830 B	24/06/99
		AU 6514596 A	05/03/97
		CN 1192183 A	02/09/98
		DK 87995 A	05/02/97
		EP 0961730 A	08/12/99
		JP 11510130 T	07/09/99
		NO 980459 A	23/03/98
		NZ 313142 A	28/01/99
		PL 324802 A	22/06/98
		US 6065602 A	23/05/00
DE 3729514 A1	24/03/88	AU 595369 B	29/03/90
		AU 7824787 A	17/03/88
		FR 2603978 A,B	18/03/88
		GB 2195429 A,B	07/04/88
		GB 8719467 D	00/00/00
		IT 1197212 B	30/11/88
		IT 8621683 D	00/00/00
		JP 63135767 A	08/06/88
		US 4841881 A	27/06/89
WO 9807327 A1	26/02/98	AU 4036397 A	06/03/98
CA 1195162 A	15/10/85	NONE	